



Volunteer Lake Assessment Program Individual Lake Reports

PINE ISLAND POND, MANCHESTER, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	44,204	Max. Depth (m):	3	Flushing Rate (yr ⁻¹)	326
Surface Area (Ac.):	42	Mean Depth (m):	1.5	P Retention Coef:	0
Shore Length (m):	3,385	Volume (m ³):	265,000	Elevation (ft):	151

TROPHIC CLASSIFICATION

Year	Trophic class
1980	EUTROPHIC
1997	EUTROPHIC

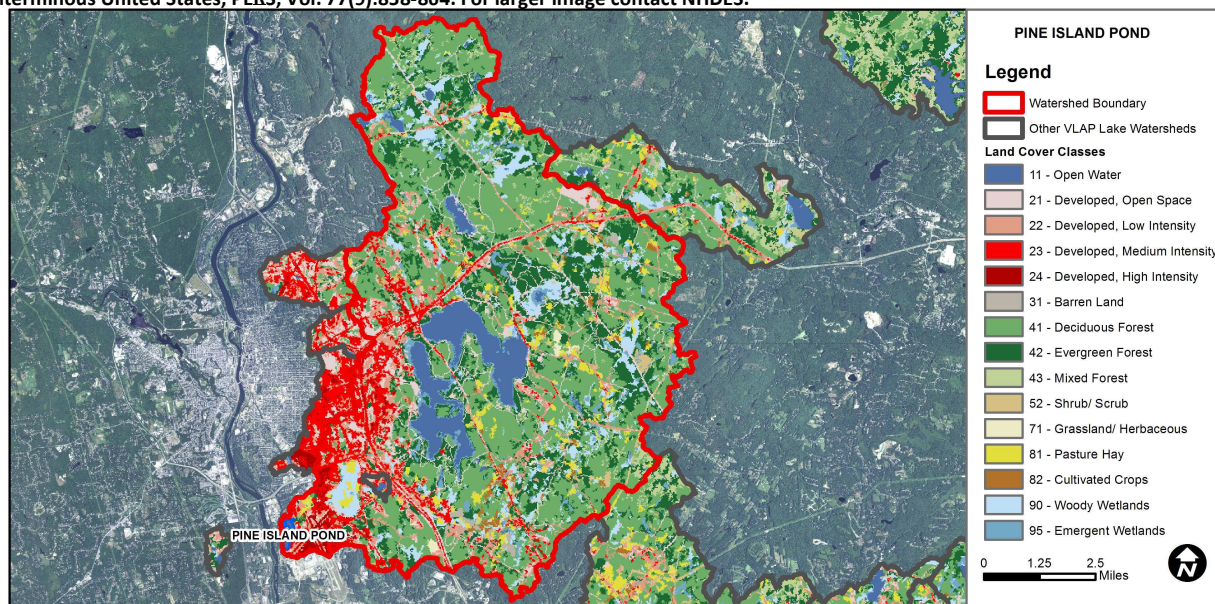
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Good	>=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	No Data	No Data for this parameter.
	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	5.63	Barren Land	0.47	Grassland/Herbaceous	0.28
Developed-Open Space	6.6	Deciduous Forest	37	Pasture Hay	3.09
Developed-Low Intensity	8.16	Evergreen Forest	16.64	Cultivated Crops	0.86
Developed-Medium Intensity	6.32	Mixed Forest	2.22	Woody Wetlands	7.2
Developed-High Intensity	1.01	Shrub-Scrub	1.25	Emergent Wetlands	2.99



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

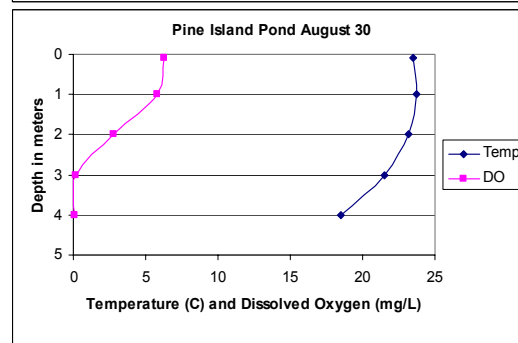
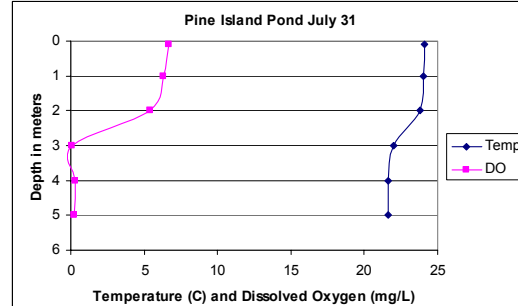
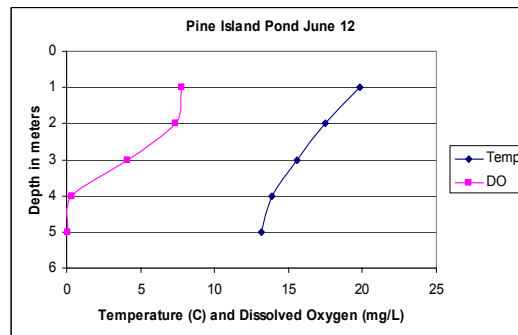
PINE ISLAND POND, MANCHESTER, NH

2012 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphic)

- ♣ **CHLOROPHYLL-A:** Chlorophyll levels increased to bloom proportions by late August and average levels were much greater than the NH lake median. Historical trend analysis indicates chlorophyll levels tend to fluctuate annually.
- ♣ **CONDUCTIVITY/CHLORIDE:** Conductivity levels were elevated at all stations and indicative of the urbanized watershed.
- ♣ **TOTAL PHOSPHORUS:** Epilimnetic (upper water layer) and metalimnetic (middle water layer) phosphorus were much greater in August and likely contributed to the algal bloom. Historical trend analysis indicates epilimnetic phosphorus levels tend to fluctuate annually. Hypolimnetic (lower water layer) phosphorus was elevated throughout the summer due to the release of phosphorus from the sediments under anoxic conditions.
- ♣ **TRANSPARENCY:** Transparency levels were average for the pond and historical trend analysis indicates a relatively stable transparency since monitoring began.
- ♣ **TURBIDITY:** Epilimnetic and metalimnetic turbidities were elevated in August due to the algal bloom. Hypolimnetic turbidity was elevated throughout the summer months likely due to the release of organic compounds under anoxic conditions; however sediment was noted in the June sample.
- ♣ **pH:** pH levels were sufficient to support aquatic life, however have exceeded critical levels in the past.
- ♣ **RECOMMENDED ACTIONS:** Pine Island Pond is an urban pond greatly impacted by its watershed. While it is recommended to address conductivity, chloride and phosphorus loading, we recognize the limitations in improving water quality. However, a starting point may be addressing stormwater runoff from residential properties along the immediate shoreline.

Dissolved Oxygen & Temperature Profile



Station Name	Table 1. 2012 Average Water Quality Data for PINE ISLAND POND						
	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	Total P ug/l	Trans. m	Turb. ntu	pH
					NVS		
Deep Epilimnion	16.9	11.93	306.0	27	2.13	1.96	7.00
Deep Metalimnion			292.0	35		2.82	6.70
DeepHypolimnion			261.7	50		12.37	6.61
Inlet			410.7	17		1.67	7.07
Outlet			303.3	23		1.14	7.16

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

Alkalinity: 4.9 mg/L

Chlorophyll-a: 4.58 mg/m³

Conductivity: 40.0 uS/cm

Chloride: 4 mg/L

Total Phosphorus: 12 ug/L

Transparency: 3.2 m

pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

Chloride: < 230 mg/L (chronic)

E. coli: > 88 cts/100 mL – public beach

E. coli: > 406 cts/100 mL – surface waters

Turbidity: > 10 NTU above natural level

pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	Variable	Data fluctuate annually, but are not significantly increasing or decreasing.
Transparency	Stable	Data not significantly increasing or decreasing.
Phosphorus (epilimnion)	Variable	Data fluctuate annually but are not significantly increasing or decreasing.

This report was generated by the NH DES Volunteer Lake Assessment Program (VLAP). For more information contact:

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